CONSERVATION COVER

(Acres)
Code 327

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

Establishing and maintaining perennial vegetative cover to protect soil and water resources on land retired from agricultural production.

II. Purpose

To reduce soil erosion and sedimentation, improve water quality, and create or enhance wildlife habitat.

III. Conditions Where Practice Applies

On land retired from agricultural production, including land entered into retirement programs. This practice does not apply to plantings for forage production or to critical area plantings.

IV. Federal, State, and Local Laws

Users of this standard should be aware of potentially applicable federal, state and local laws, rules, regulations or permit requirements governing conservation cover. This standard does not contain the text of federal, state, or local laws.

V. Planning Considerations

- The long-term objectives of the land user and the needs of target wildlife species are important considerations in the selection of vegetative cover.
- Other conservation practices, such as grassed waterways, may be needed to complete the erosion control plan.

VI. Specifications

All land will be established to permanent vegetative cover during the first year of the land use conversion, if possible. Temporary cover, during the first year, may be used if: 1) required seeds or plant stock are not available, 2) the normal planting period for the species has passed or 3) where chemical residue will not allow establishment of permanent cover immediately. If temporary cover is used, the permanent vegetative cover must be established by the end of the normal planting period of the second year.

A. Temporary Cover

1. Erosion must be controlled until the permanent seeding is made. A temporary cover will not need to be seeded on those areas of fields where at least 70% of the ground is covered with either crop residue or vegetative cover.

2. If seedbed preparation must be started in the fall, limited fall tillage operations are permitted as long as 50% crop residue cover remains after such tillage. Weeds must be controlled before weed seeds mature, by mowing or use of approved herbicides, to prevent excessive competition to the permanent seeding.

3. Where planting is delayed due to unavailability of seed or the normal planting period has passed, seed one of the following:

   - Winter wheat - 1 1/2 bu/ac.
   - Winter rye - 1 1/2 bu/ac
   - Oats - 1 1/2 bu/ac.
   - Annual ryegrass - 6 lbs/ac.

   Temporary cover crops must be clipped or destroyed before they head out to prevent excessive competition to the permanent seeding. Winter wheat and rye must be killed by tillage or herbicides before planting the permanent seeding.

4. Fields with atrazine carryover[1]. Seed one of the following:

   - Forage sorghum - 15 lbs/ac.
   - Sorghum - Sudangrass hybrid - 25 lbs/ac.
   - Sudangrass - 25 lbs/ac.

   [1] If more than 2 lbs of atrazine (active ingredient) per acre was applied pre-emerge or 1 1/2 to 2 lbs atrazine (active

ingredient) per acre was applied post-emerge to the previous crop, a chemical carryover is assumed. A bioassay test may be used to better determine chemical carryover. Switchgrass may grow in areas of atrazine carryover.

B. Ground Cover Requirements for Fields to be Planted to Trees.

1. All soils in Land Capability Classification IV, VI or VII will be seeded to a permanent cover or temporary cover.

   a. Fields in sod.

      If the field is already in sod, then no additional cover is required. If the forester determines the existing sod will be a significant competitor to the trees, the field may be plowed and reseeded to a permanent cover or temporary cover.

2. Soil in Land Capability Classification I, II or III.

   These soils will be established to a temporary cover. Residue cover of at least 70% is acceptable in place of the temporary cover.

3. Cover is not required when trees are established on 0-2% or A slope soils, except for soils in Wind Erodibility group 1 or 2, which must meet the criteria for Land Capability Class I, II and III regardless of slope group.

4. The entire field may be seeded prior to planting of the trees. Use the appropriate mechanical or chemical methods to control vegetation in the tree row. Adjust width of area where vegetation is controlled to maintain erosion control.

5. Planned access lanes and firebreaks within the plantation will be seeded to permanent cover.

6. Tree rows, access lanes and firebreaks will be installed as near as possible on the contour.

C. Permanent Vegetative Cover.

1. Fertilizer. Fertilizer will be applied according to a current soil test and will be consistent with University of Wisconsin Extension recommendations. A current soil test is defined as one dated July 1 or later of the third year prior to the current year. For example, to be valid for 1997, the test must be dated July 1, 1994 or later. **Do not apply nitrogen to warm-season grasses the seeding year.**

2. Lime. When alfalfa is part of the seeding mixture, the soil pH must be corrected to 6.5. When birdsfoot trefoil, red clover or ladino clover is a part of the seeding mixture, pH must be corrected to 6.2. Liming material will be applied according to soil test recommendations except that recommended applications of 2 tons (4,000 lbs) per acre, or less, of grade 60-69 lime, do not have to be applied. For "grass only" seedings, correct soil pH to a minimum of 5.5.

3. Seeding Periods

   Date of seeding is a critical factor in determining whether a seeding will succeed or fail. The specific date that provides the best chance for success will vary from south to north and from year to year with prevailing moisture and temperature conditions. Late summer seeding is generally riskier than spring seeding. Planting at either end of the allowable range is riskier than the middle of the range. Seeding dates are as follows:

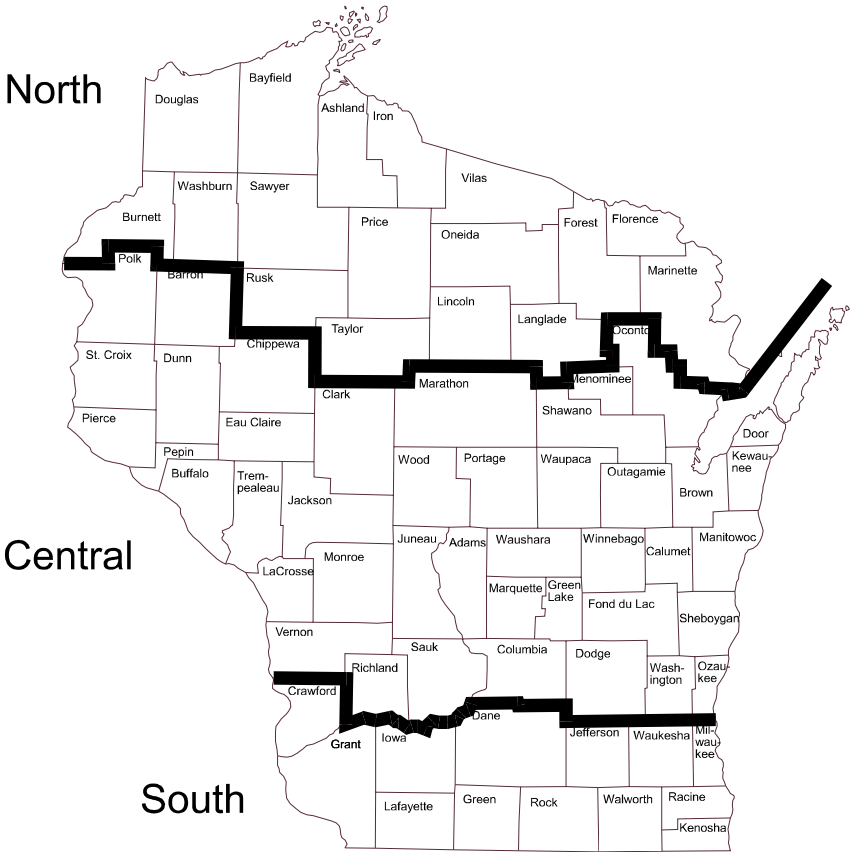
Perennial Cool Season Grasses and Legumes - See Figure 1

	Spring	Late Summer
North	5/1 - 6/15	7/15 - 8/10
Central	4/15 - 6/1	8/1 - 8/21
South	4/1 - 5/15	8/7 - 8/29

Perennial Warm Season Grasses and Forbs- See Figure 1

	Spring	Fall
North	Thaw-7/15	10/8-Freeze up
Central	Thaw-6/30	10/15-Freeze up
South	Thaw-6/30	10/22-Freeze up

Figure 1



4. Weed Control.

   a. Weed control for establishment of warm-season plants is essential. Warm-season plants should not be seeded in dense stands of quackgrass.

   b. Mowing must be done to control weed competition during the seeding year. Mow when the weeds exceed the height of the seeding. Mow high enough to prevent damage to the permanent seeding. Be careful not to smother young seedlings with the mowed material.

5. Seedbed Preparation.

   a. Conventional tillage.

      1) For conventional seeding, prepare a fine firm seedbed to a minimum depth of 3 inches. The seed-bed should contain enough fine soil particles for uniform shallow coverage of the seed as well as contact with moisture and nutrients.

      2) When seeding warm-season grass species, it is very important to have a firm seedbed. Cultipack before and after seeding if possible.

b. No-till.

1) Apply approved herbicides to kill or suppress existing vegetation and control weeds.

2) Use a no-till drill.

6. Seed Information.

a. All seeding rates are given in Pure Live Seed (PLS) per acre. Seed tests must show the percentage of germination and percentage of purity. Germination x Purity = Pure Live Seed.

b. Inoculate legume seed with the inoculant specific for the species. If the seed was preinoculated more than 60 days prior to seeding, reinoculate.

7. Grass & Legume Seeding Mixtures

Seeding mixtures will be selected from Table I or will be developed from Table II based on the following requirements or warm season seed mixtures may also be selected or developed from Agronomy Technical Note No. WI-5.

a. Cool Season mixtures must contain at least 50% grass. At least 50% of the grass in the mixture must be sod forming, i.e. at least 25% of the total seed mixture must be Smooth Bromegrass or Kentucky Bluegrass.

b. Cool Season mixtures for areas with shrub and tree planting are not required to contain 25% sod forming grass. These seed mixtures must still contain at least 50% grass. Smooth Bromegrass is not allowed in these mixtures.

c. Warm Season Grasses will be seeded only with other warm season plant species.

d. Any seeding mixture which is developed from Table II may only be used after review and approval by the appropriate NRCS Resource Conservationist.

8. Variety Selection

a. Cool Season Grasses and Legumes

Refer to University of Wisconsin Extension Publication A1525, "Perennial Forage Crop Variety Update for Wisconsin".

b. To insure long stand life, seeds listed as Hardy (H) or Very Hardy (VH) in Tables 1 and 2 of Wisconsin Circular A-1525-1, Forage Crop Varieties and Seeding Mixtures (found in the field office technical reference file), are preferred, with varieties listed as Moderately Hardy-Plus (MH+) acceptable. Varieties designated as Resistant (R) and Moderately Resistant (MR) for phytophthora resistance are recommended for soils that are moderately well-drained and can be wet during a portion of the year.

c. Warm Season Grasses

Where available, local genotype species are preferred. Otherwise, see Table III.

9. Stand Evaluation

To evaluate a new or existing stand, refer to Wisconsin Agronomy Technical Note 1, Guidelines for Herbaceous Stand Evaluation.

10. Special Erosion Control Measures.

a. Cool Season Mixtures

For Introduced Mixtures - Oats, barley, winter wheat, rye, or spring wheat shall be seeded at the rate of 1½ bushels/acre in the spring or fall. -Annual rye grass may be used in lieu of small grain at the rate of 3 lb/acre. With the exception of annual ryegrass, the companion crop shall be mowed before heading. Mow 8 - 10 in. high to avoid harm to the permanent seeding.

b. Warm Season Mixtures

For Native Mixtures - Where planting a companion crop, use a mixture which contains: Canada Wild Rye (Elymus canadensis), seeded at 1-2 lbs. PLS/acre or Side-oats Grama (Bouteloua curtpendula), seeded at 1-2 lbs.

PLS/acre, or Oats (Avena sativa) seeded at ½ bushel/acre (spring only).

Because warm-season plants may be slow to establish, special erosion control measures will be needed on land capability classes IVe, VIe, and VIIe. Warm-season plantings will be permitted only if;

1) There is at least 70% existing ground cover and the seeds are planted with a specialized grass drill using the no-till seeding method. Temporary cover crops may be seeded to obtain the required cover. See Section I.C and I.D.

OR

2) The warm-season plants are planted in alternating strips with a temporary cover. These strips would not be more than two drill widths or 25 feet wide, whichever is greater. The strip planted to temporary cover will be seeded to warm-season plants during the next seeding period.

11. Cover Management for Stand Maintenance and Wildlife Benefits.

    a. Mowing.

        1) Mowing must be done to control weeds and/or companion crop competition during the seedling year. Mow when weeds exceed the height of the seeding and high enough to prevent damage to the permanent seeding.

        2) After the seedling year, use spot mowing or spot herbicide treatment to control noxious weeds and other undesirable plant growth.

        3) Any planned mowing (except for noxious weed control) after the seedling year, should be done between July 15 and September 1, to provide nesting cover and reduce disruption of nesting activities.

    b. For more detailed management options, refer to Wildlife Habitat Management 645.

12. Only those pesticides which are labeled for the specific use will be recommended. Refer to specific label instructions for guidance on pesticide use.

13. Existing Vegetation

    Existing perennial forb and grass species can be accepted as conservation cover if they control erosion to acceptable levels as defined in Section III of the Field Office Technical Guide.

TABLE I

MIXTURES	POUNDS (PURE LIVE SEED)/AC	pH MINIMUM	WET SOILS	RELATIVE WILDLIFE NESTING VALUE
COOL SEASON				
*1. Timothy Smooth Bromegrass Alfalfa	1 4 7	6.5	No	High
2. Timothy Orchardgrass Smooth Bromegrass Alfalfa	1 1/2 2 7	6.5	No	High
3. Timothy Orchardgrass Alfalfa	1 1 7	6.5	No	Medium
4. Timothy Smooth Bromegrass Red Clover Ladino (optional)	2 5 6 1/2	6.2	Yes	Medium
5. Timothy Smooth Bromegrass Orchardgrass Red Clover Ladino (optional)	2 2 1/2 6 1/2	6.2	Yes	Medium
6. Timothy Orchardgrass Red Clover Ladino (optional)	2 1 6 1/2	6.2	Yes	Medium-Low
7. Birdsfoot Trefoil Timothy	6 3	6.2	Yes	Low

* Mixture 1 is the preferred cool season mixture for Conservation Reserve Program (CRP) acres. Where it is not possible to establish Mixture 1 due to imperfectly or poorly drained soils or where the technician determines that pH cannot practically be raised to 6.5, or if the land user prefers, use other mixtures.

WARM SEASON GRASSES				
8. Switchgrass	6	5.5	Yes	Medium
9. Big Bluestem Switchgrass	5 3	5.5	No	High
10. Big Bluestem Switchgrass Indiangrass Little Bluestem (opt.)	3 2 3 2	5.5	No	High

WARM SEASON MIXTURES WITH FORBS AND LEGUMES				
11. Switchgrass White wild indigo[1] or Canada tick trefoil[2] Black-eyed Susan[3] Yellow coneflower[4] Other native legumes and forbs as desired	3 lb PLS 2.0 oz PLS 1.0 oz PLS 1.0 oz PLS 1.0 oz PLS	5.5	Yes	High
12. Big Bluestem Switchgrass White wild indigo[1] or Canada tick trefoil[2] Black-eyed Susan[3] Yellow coneflower[4] Other native legumes and forbs as desired	3 lb PLS 1 lb PLS 2.0 oz PLS 1.0 oz PLS 1.0 oz PLS 1.0 oz PLS	5.5	No	High
13. Big Bluestem Switchgrass Indiangrass Little Bluestem (opt.) White wild indigo[1] or Canada tick trefoil[2] Black-eyed Susan[3] Yellow coneflower[4] Other native legumes and forbs as desired	1 lb PLS 1 lb PLS 3 lb PLS 1 lb PLS 2.0 oz PLS 1.0 oz PLS 1.0 oz PLS 1.0 oz PLS	5.5	No	High

OTHER SUGGESTED FORBS AND LEGUMES		
Ox-eye sunflower	Heliopsis helianthoides	.50 - 1.0 oz PLS/ac
Round-headed bush-clover	Lespedeza capitata	.50 oz PLS/ac
Purple Prairie Clover formerly (Petalostemum purpureum)	Dalea purpurea	2.0 oz PLS/ac
Rigid goldenrod	Solidago rigida	.25 oz PLS/ac
Showy goldenrod	Solidago speciosa	.25 oz PLS/ac
Lespedeza capitata is adaptable to a wide range of site conditions including eroded sites.		
Dalea purpurea is especially suited to dry and/or eroded sites.		

[1] Baptisia lactea formerly known as Baptisia leucantha
[2] Desmodium canadense
[3] Rudbeckia hirta
[4] Ratibida pinnata

Table II

Recommended Pure Stand Rate			
Grasses	**PLS** Pounds Per Acre	**Legumes**	**PLS** Pounds Per Acre
Cool Season			
Orchardgrass	**10**	**Alfalfa**	**12**
Kentucky Bluegrass	8	Alsike Clover	3
Smooth Bromegrass	**16**	**Birdsfoot Trefoil**	**6**
Timothy	8	Ladino Clover	**3**
Red Top	4	Red Clover	10
Warm Season			
Big Bluestem	**10**	If more than 20% of the legume seed is hard seed. Increase the seeding rate for legumes by the % hard seed.	
Indiangrass	10		
Switchgrass	6		
Little Bluestem	10		

Example: A seed mixture of 50% alfalfa and 25% smooth bromegrass and 25% orchardgrass is desired. What would be the seeding rate of each specie in the mixture in pounds of Pure Live Seed?

To solve this problem, take the pure stand seeding rate in PLS pounds per acre for each specie, multiply this value times the percent of that specie desired in the mixture and the answers will be the seeding rates of each specie in pounds of Pure Live Seed per acre.

Specie	Pure Stand Seeding Rate Pounds/Acre	X Percent in Mix =	Seeding Rate Pounds PLS/acre for Mixture
Alfalfa	12	50%	6
Smooth Bromegrass	16	25%	4
Orchardgrass	10	25%	2.5

Total PLS pounds per acre = 12.5

Table III

Recommended Varieties of Warm-Season Grass for Conservation Cover
See Figure 1

Specie	Variety	Area of Adaptability
Big Bluestem	Bison	North
	Bonilla	Central
	Champ	South
	Pawnee	South
	Rountree	Central and South
Indiangrass	Holt	Central and South
	Rumsey	South
	Tomahawk	North
Switchgrass	Blackwell	South
	Cave-in-Rock	South
	Dacotah	North
	Forestburg	Central
	Nebraska 28	Central
	Pathfinder	South
	Sunburst	Central
	Trailblazer	South
Little Bluestem	Blaze	Statewide
	Aldous	South
	Camper	Central and South

* Wisconsin Native genotype material may be used in warm season mixtures statewide. It must be tested for germination and purity like other seed varieties, unless seeded following the requirements for untested local genotypes in Agronomy Technical Note No. WI-5.

VII. References

USDA, NRCS Wisconsin Field Office Technical Guide (FOTG), Section III.

University of Wisconsin Extension Publicat9ion A1525, Perennial Forage Crop Variety Update for Wisconsin.

USDA, NRCS Wisconsin Agronomy Technical Note 1, Guidelines for Herbaceous Stand Evaluation.

USDA, NRCS Wisconsin Agronomy Technical Note 5.